REMARKS

Claims 1-48 and 50-53 are currently pending in the present application, with Claims 1, 10, 13, 18, 25-27, 40, 43, and 48 being amended, and Claims 50-53 being added. Reconsideration and reexamination of the claims are respectfully requested.

The Examiner rejected Claims 27-30, 32, 33, 35, 36, and 40 under 35 U.S.C. § 102(b) as being anticipated by Miyake (U.S. Patent No. 5,256,832). This rejection is respectfully traversed with respect to the amended claims.

As discussed in the previous communication, Claim 27 (and corresponding apparatus Claim 40) recites a method for analyzing waveform data generated by a musician who manually executes a music performance in synchronization with a musical performance reproduced using automatic performance information (e.g., MIDI). More specifically, the musician performed waveform data is stored in parallel to the reproduction of automatic performance information, along with the storing of a series of synchronization control data indicating a timing relationship between the automatic performance data reproduced and the waveform data sampled from the musician performance. The recited method makes possible to compare the timing of the automatic performance information and that of the musician performance for purposes of expanding or compressing the waveforms in accordance with a particular set tempo.

Miyake, on the other hand, is directed to detecting beat positions from stored audio signals, which are reproduced and used to generate MIDI clock pulses, where the MIDI clock pulses are generated on the basis of the detected beat positions. Miyake does not contain any disclosure of reproducing automatic performance information during, as recited by amended Claim 27 (and similarly Claim 40). While the Examiner points to Col. 3, third paragraph as disclosing reproduction of automatic performance information, Applicants respectfully note that the cited reference only discloses detecting beat positions from sounds reproduced from audio signals, and does not teach or suggest reproducing automatic performance information, where the automatic performance information is reproduced in accordance with a generated tempo clock. More importantly, Miyake does not remotely contain any disclosure or suggestion of associating

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waveform data generated from the musician performance with timing data from the automatic performance. Accordingly, Applicants respectfully submit that Claims 27-30, 32, 32, 35, 36, and 40 are not anticipated by, nor obvious in view of, Miyake.

The Examiner rejected Claims 41-48 under 35 U.S.C. § 102(b) as being anticipated by Katoh (U.S. Patent No. 4,794,837). This rejection is respectfully traversed.

As previously communicated, Claim 41 (and similarly Claim 47) recites a method of processing waveform data in which the original waveform data is divided into multiple partial waveform data; and an additional section is added to the tail end of each of the partial waveform data to as to attenuate the partial waveform over time to an envelope level at an end of a corresponding one of the partial waveform data. The modified partial waveform data is then stored in a storage device. By dividing the original waveform data into multiple partial waveform data and attaching additional sections to each of the partial waveform data, time-axial contraction/expansion of the original waveform can be realized.

Katoh discloses that waveform data in PCM and in DPCM formats are prestored in a waveform memory and, when the DPCM waveform data is to be read out from the memory, it is converted into the PCM format to generate a tone. Katoh does not disclose or suggest dividing original waveform data into a plurality of partial waveform data. Rather, Fig. 6 as pointed to by the Examiner simply shows storing a waveform that is stored in a memory, wherein SA_1 and SA_2 simply indicate start addresses for the attack portion and sustain portion of the waveform (see Col. 10, lines 47-68).

More importantly, Even if Katoh is interpreted as disclosing the feature of dividing original waveform data and storing the divided waveform data in memory in the PCM and DPCM formats as mentioned by the Examiner, Katoh does not even slightly teach or suggest adding waveform data of an additional section to each of the divided PCM and DPCM waveform data; in fact, Katoh does not teach or suggest adding waveform data whatsoever. The Examiner essentially vitiates this limitations of Claim 41 by arguing that the different PCM coding formats are used for "purposes" of adding attenuating additional sections, while not point to any

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teachings within Katoh to support that purpose. Applicants respectfully submit that it is only in hindsight of the present application that one skilled in the art would consider adding additional attenuating waveform data to divided partial waveforms.

Similarly, with respect to Claim 43 (and similarly Claim 48), Katoh simply does not suggest or teach adding or not adding additional sections to a divided waveform section in accordance with the particular tempo is used. Specifically, Katoh does not contain any disclosure of the feature wherein, <u>when a reproducing tempo is faster than a predetermined tempo, the waveform data of the divided sections are used to reproduce a waveform without the additional section, and when the reproducing tempo is slower than the predetermined tempo, additional sections are added to the tail end of the waveform data of the divided sections</u>. The Examiner argues that Katoh teaches adding sections to divided waveform sections, but provide no support for this observation other than focusing on the relationship between time and tempo. More importantly, the Examiner does not point to any teachings or suggestions in Katoh that remotely suggest differential treatment of waveform reproduction in accordance with the speed of the tempo.

In view of the above, Applicants respectfully submit that Claims 41-48 are not anticipated by, nor obvious in view of, Katoh.

The Examiner rejected Claims 1-26 under 35 U.S.C. § 103(a) as being unpatentable over Yamada et al. (U.S. Patent No. 5,614,687) in view of Miyake (U.S. Patent No. 5,256,832). This rejection is respectfully traversed with respect to the amended claims.

As previously communicated, Claim 1 (and similarly Claim 10) are directed to method and apparatus for analyzing a waveform data, wherein a particular type of waveform is first designated from multiple different types of waveforms, after which the designated waveform is subject to a filter process for removing unwanted frequency components. Furthermore, the envelope of the filtered waveform is analyzed to determine dividing positions of the waveform data. Claim 1 has been amended to further limit the plurality of waveform types of include at least a sustained-sound-related waveform type and a percussion-sound-related waveform type.

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Neither Yamada nor Miyake contain any disclosure of designating a particular type of waveform from amongst a plurality of waveforms. Instead, the Yamada reference discloses only detecting the number of beats in a music piece by extracting a waveform of a low-frequency component from the input audio signal and detecting a peak value of the low-frequency component's waveform to determine a predetermined time period of the waveform. Similarly, relevant parts of Miyake simply discloses determining, via guide tapping, an average section corresponding to one beat and detecting a beat position on the basis of peak value exceeding a predetermined threshold. No mention is made in either reference towards the feature of designating a particular type of waveform. More importantly, the Examiner does not point to any teaching or motivation in either reference for combining the two references.

The additional amendments to Claims 1 and 10 further distinguish them from the cited references. In particular, Col. 8, line 34 to Col. 9, line 45 of Miyake, pointed out by the Examiner, discloses only that, in performance tones with simultaneously-sounding tones of various musical instruments, peaks of respective amplitude envelopes of the musical instruments' tones do not necessarily agree with a beat position (beat point) and therefore an accurate beat position cannot be detected by merely evaluating an amplitude envelope level with a trigger threshold TH. Miyake simply does not disclose or teach the features of amended Claims 1 and 10 in that "a waveform type, such as a sustain-sound-related or percussion-sound-related waveform type, of original waveform data is designated so as to perform an appropriate filtering process on the waveform data" and that "a filtering process corresponding to a designated waveform type is performed".

Yamada fails to make up for the deficiencies of Miyake. Specifically, the "sustain-sound-related and percussion-sound-related waveform type" mentioned in amended claims 1 and 10 of the instant application are completely different from a particular frequency component as mentioned in Yamada. Specifically, Yamada discloses a technique of: filter-processing an input waveform to extract a waveform of a low frequency component; detecting a peak value of the waveform of the low frequency component; generating a slice level signal on the basis of the

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detected peak level; and determining a predetermined period for detecting the number of beats of a music piece. In order to accurately detect the number of beats of the music piece, Yamada is arranged to extract in advance a predetermined frequency component from waveform data; however, such an arrangement does not anticipate or make obvious to the limitation of "previously designating a waveform type, such as a sustain-sound-related or percussion-sound-related waveform type, of original waveform data so as to select an appropriate filtering process to be performed on the waveform data". Therefore, Yamada fails to make up for the deficiencies of Miyake in disclosing the limitations of amended claims 1 and 10.

With respect to Claim 3 (and similarly Claim 12), neither reference contain any disclosure of calculating a differential value of the envelope of a waveform that is detected as having been subject to a filter process, and determining dividing positions of the waveform based on such calculations. Applicants are confused by the Examiner's response on page 8 of the Final Office Action in that "designating" or "extracting" a waveform of a low frequency is not recited in either Claim 3 or 12.

Regarding Claims 13 (and similarly Claim 25), the cited references do not contain any disclosure of detecting a plurality of rise positions within predetermine ranges and analyzing the rise positions to thereby extract one particular rise position for each of the predetermined ranges as a dividing point of the original waveform data.

Rather, as previously communicated, Miyake simply discloses using the human ear to effectuate a guide tapping control method in order to determine a reference time width for a given beat, the time width being later used by a CPU to detecting the timing of that beat (See Col. 8, lines 49-68, and Col. 9, lines 43-52). Yamada fails to make up for the deficiencies of Miyake. According to the disclosure of Yamada, an input waveform is subjected to a filtering process to extract a waveform of a low frequency component, and, when the waveform of the low frequency component has exceeded a predetermined level, a slice level signal is generated and time measurement is initiated. Then, when the low frequency component has again exceeded the predetermined level, the time measurement is terminated. In this way, the

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disclosed technique detects the number of beats of a music piece. Accordingly, neither Miyake nor Yamada contain any disclosure or suggestion of "detecting rise positions <u>within predetermined ranges</u> corresponding to (preceding and following) presumed beat positions and "analyzing the rise positions to thereby extract one of the rise positions, <u>for each of the predetermined ranges</u>, as a dividing position".
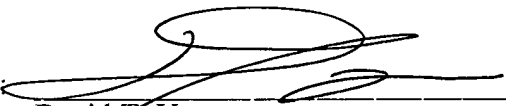
Similarly, with respect to Claim 18 (and similarly Claim 26), neither reference contain any disclosure of analyzing one or more rise positions to determine a dividing position of the original waveform data within each predetermined range.

In view of the foregoing, Applicants respectfully submit that all of the pending claims are in condition for allowance. Reconsideration and reexamination of the claims, as amended, are respectfully requested, and an early allowance is solicited. If the Examiner believes it would further advance the prosecution of the present application, he is respectfully requested to contact the undersigned attorney.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, Applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 393032030300.

Respectfully submitted,

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